

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Air Permit Review

Permit Issue Date:

Region: Winston-Salem Regional Office
County: Randolph
NC Facility ID: 7600276
Inspector's Name: Robert Barker
Date of Last Inspection: 01/05/2016
Compliance Code: 5 / In Physical Compliance

Facility Data Applicant (Facility's Name): StarPet, Inc. Facility Address: StarPet, Inc. 801 Pine View Road Asheboro, NC 27203 SIC: 2821 / Plastics Materials And Resins NAICS: 325211 / Plastics Material and Resin Manufacturing Facility Classification: Before: Synthetic Minor After: Synthetic Minor Fee Classification: Before: Synthetic Minor After: Synthetic Minor			Permit Applicability (this application only) SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other:				
Contact Data			Application Data				
Facility Contact Jason Greenwood Senior Technical Manager (336) 672-0101 801 Pine View Road Asheboro, NC 27203	Authorized Contact Avnish Madan VP of Operations (336) 672-0101 801 Pineview Road Asheboro, NC 27203	Technical Contact Durgesh Kushwaha Senior Production Manager (336) 672-0101 801 Pine View Road Asheboro, NC 27203	Application Number: 7600276.14A Date Received: 12/06/2013 Application Type: Modification Application Schedule: TV-1st Time Existing Permit Data Existing Permit Number: 08157/R11 Existing Permit Issue Date: 08/15/2016 Existing Permit Expiration Date: 03/31/2022				
Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2012	0.1643	27.17	19.41	22.82	2.10	12.87	6.37 [Ethylene glycol]
2008	0.1500	25.68	21.60	21.58	1.53	13.70	6.90 [Ethylene glycol]
2003	0.0500	9.52	7.20	8.00	4.49	2.15	2.04 [Acetaldehyde]
Review Engineer: Heather Sands Review Engineer's Signature: Date:					Comments / Recommendations: Issue 08157/T12 Permit Issue Date: Permit Expiration Date:		

I. Purpose of Application:

StarPet, Inc. (StarPet) currently holds Permit No. 08157/R11 with an expiration date of March 31, 2022, for a polyethylene terephthalate (PET) resins plant in Asheboro, Randolph County, North Carolina. This permitting action (Permit Application No. 7600276.14A) is for a first-time Title V air permit. The permit application was received on December 6, 2013. The terms and conditions of the existing permit of the existing permit shall remain in effect until the Title V Permit has been issued or denied.

II. Facility Description

StarPet manufactures and processes PET resins for the beverage industry. Polyethylene terephthalate resins are produced from mono ethylene glycol (MEG) and either dimethyl terephthalate (DMT) or terephthalic acid (TPA). At the Asheboro facility, StarPet manufactures PET using the TPA process. The Asheboro Plant has two PET process lines, referred to as continuous polymerization PET production lines (CP1 and CP2) and two solid stating plants (SSP1 and SSP2) that convert the PET chips to product. Table 1 presents a list of equipment present at the StarPet plant, along with uncontrolled and controlled emissions, and the equipment point type (i.e., insignificant activity or permitted source). The following description provides a brief summary of the production process at the StarPet plant based on information included in the December 2013, permit application. The StarPet facility operates 24 hours per day, 7 days per week, for 52 weeks per year.

A. Raw Material Storage Section

Raw materials are brought onsite via tanker truck and railcar and are stored primarily in storage tanks and storage silos. The following raw materials are stored onsite:

- Monoethylene glycol (MEG);
- Spent ethylene glycol (SEG);
- Diethylene glycol (DEG);
- Terephthalic acid (TPA);
- Isophthalic acid (IPA); and
- Crude glycol.

As shown in Table 1, the storage tanks and other process units in the raw materials storage section are primarily insignificant activities, with PM and VOC emissions less than 5 tpy and HAP emissions less than 1,000 lb/yr (0.5 tpy). Fugitive HAP emissions related to raw material unloading and storage are greater than 1,000 lb/yr and are not considered insignificant activities and will be included in the permit.

B. Raw Materials Preparation Section for CP1 and CP2

The raw materials preparation section is where raw materials are prepared for use in the PET production process. The following systems are included in the raw materials preparation section.

- Toner preparation and feeding system
- RH1 preparation and feeding system
- Additive preparation and feeding system
- DEG feeding system
- Catalyst preparation and feed system
- IPA System
- Paste preparation section

Terephthalic acid and MEG are mixed together with other raw materials to form a paste. Toner and other additives (e.g., RH1, DEG, IPA, U1, and p-additive) are added to the paste preparation to adjust color properties and other physical properties of the product. Other heat stabilizing additives, such as

Table 1. Summary of Equipment Present at StarPet Facility

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
Raw Materials Storage Section								
EP88	I-1107-T01	Monoethylene Glycol (MEG) Storage Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP2	I-1107-T02	MEG Storage Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP61	I-1107-T03	Spent Ethylene Glycol (SEG) Holdup Tank	None	None	VOC	0.0044 tpy	NA	Insignificant Activity ¹
					HAP	0.0044 tpy (1.0x10 ⁻³ lb/hr)	NA	
EP3	I-1115-V01	Diethylene Glycol (DEG) Storage Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP4	I-1115-V02	DEG Storage Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP34	I-1199-T01	MEG Storage Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP5	I-1574-V01	DEG Feed Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity ¹
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP85	I-KD06-B-11W01	IPA Weigh Feeder	None	None	PM	0.044 ypy	NA	Insignificant Activity
Fugitives	F11-P-CP1&CP2	Raw Material Handling and Storage Area	None	None	PM	2.316 tpy	NA	Permitted Source
					VOC	0.748 tpy	NA	
					HAP	0.617 tpy (1,234 lb/yr)	NA	

¹ This source is included as a permitted source on the current permit (R11). However, VOC emissions are less than 5 tpy and HAP emissions are less than 1,000 tpy (0.5 tpy). Therefore, this source will be an insignificant activity and included on the attachment to the Title V Permit (T12).

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
Raw Materials Preparation Section – CP1								
EP6	I-1321-V01	Toner Preparation Tank	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
	I-1321-V02	Toner Feed Tank	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
EP7	I-1322-V01	RH-1 Preparation Tank	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
	I-1322-V02	RH-1 Feed tank	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
EP8	I-1333-V01	Additive Preparation Tank (Process Vessel)	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
	I-1333-V02	Additive Feed Vessel	None	None	VOC	0.0045 TPY	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
EP9	I-1303-W01	IPA Weigh Feeder	I-CD-1303-S01	Fabric Filter	PM	0.0050 tpy	0.0022 tpy	Insignificant Activity
EP10	I-1403-V01	Catalyst Preparation Tank	None	None	VOC	0.01 tpy	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
	I-1403-V02	Catalyst Feed Vessel (Process Vessel)	None	None	VOC	0.01 tpy	NA	Insignificant Activity
					HAP	0.0045 tpy (1.03x10 ⁻³ lb/hr)	NA	
EP12	I-1415-V01	Paste Preparation Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP13	I-1574-V02	DEG Feed Tank	None	None	VOC	0.004 tpy	NA	Insignificant Activity
Fugitives	F13-P-CP1	CP1 Additive Preparation Section	None	None	VOC	0.760 tpy	NA	Permitted Source
					HAP	0.759 tpy (1,518 lb/yr)	NA	
Continuous Polycondensation Plant 1 (CP1) - Esterification and Polycondensation Processes and Glycol Recovery								
Fugitives	F14-P-CP1	CP1 Process Section	None	None	VOC	1.503 tpy	NA	Permitted Source
					HAP	1.16 tpy (2,316 lb/yr)	NA	

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
CPI Esterification Process								
EP14	I-1427-V02	Blowdown Vessel	None	None	VOC	0.004 tpy	NA	Insignificant Activity
					HAP	0.004 tpy (9.1x10 ⁻⁴ lb/hr)	NA	
EP1	ES-1427-C02	Stripper Column – Vapors from the following sources are routed through this unit	CD-AH20-B-10U01	Natural gas-fired regenerative thermal oxidizer	VOC	27.174 tpy	0.0543 tpy	Permitted Source
	ES-1427-R01	Esterification Reactor No. 1	OR	OR	Methyl-dioxylane	8.4162 tpy	0.0168 tpy	
	ES-1423-R02	Esterification Reactor No. 2			HAP	18.64 tpy	0.0373 tpy	
	ES-1427-C01	Process Column			CD-3420-U01	Natural gas-fired thermal oxidizer		
EP1	ES-1427-V01	Reflux Vessel	CD-AH20-B-10U01	Natural gas-fired regenerative thermal oxidizer	VOC	22.85 tpy	0.0457 tpy	Permitted Source
			OR	OR	Methyl-dioxylane	6.01 tpy	0.012 tpy	
					CD-3420-U01	Natural gas-fired thermal oxidizer	HAP	
EP1	ES-1427-E02	Vapor Condenser	CD-AH20-B-10U01	Natural gas-fired regenerative thermal oxidizer	VOC	342 tpy	0.683 tpy	Permitted Source
			OR	OR	HAP	329 tpy	0.659 tpy	
					CD-3420-U01	Natural gas-fired thermal oxidizer		
CPI Polymerization Process								
EP1	ES-1473-K01 ES-1473-K02	Vacuum Pump System – vapors from the following sources are routed through this unit	CD-AH20-B-10U01	Natural gas-fired regenerative thermal oxidizer	VOC	22.25 tpy	0.0445 tpy	Permitted Source
	ES-1463-R01	Disc Ring Reactor	OR	OR	Methyl-dioxylane	4.81 tpy	0.0096 tpy	
	ES-1463-E01	Scraper Condenser			CD-3420-U01	Natural gas-fired thermal oxidizer	HAP	
	ES-1473-J01	Ethylene Glycol Vapor Jet Condenser						
	ES-1433-R01	Prepolymerization Reactor						
	ES-1433-E01	Scraper Condenser						
	ES-1473-E03	Glycol Evaporator						

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
EP16	I-1433-V01	Glycol Immersion Vessel	None	None	VOC	0.0088 tpy	NA	Insignificant Activity
					HAP	0.0088 tpy (2.1x10 ⁻³ lb/hr)	NA	
	I-1433-V02	Spent Glycol Immersion Vessel	None	None	VOC	0.0088 tpy	NA	Insignificant Activity
					HAP	0.0088 tpy (2.1x10 ⁻³ lb/hr)	NA	
	I-1463-V01	Glycol Immersion Vessel	None	None	VOC	0.0088 tpy	NA	Insignificant Activity
					HAP	0.0088 tpy (2.1x10 ⁻³ lb/hr)	NA	
	I-1473-V01	Glycol Immersion Vessel	None	None	VOC	0.0088 tpy	NA	Insignificant Activity
					HAP	0.0088 tpy (2.1x10 ⁻³ lb/hr)	NA	
	I-1473-V02	Glycol Collection Vessel	None	None	VOC	0.0088 tpy	NA	Insignificant Activity
					HAP	0.0088 tpy (2.1x10 ⁻³ lb/hr)	NA	
EP11	I-1473-V03	Spent Glycol Collection Vessel	None	None	VOC	0.00438 tpy	NA	Insignificant Activity
					HAP	0.00438 tpy (1.0x10 ⁻³ lb/hr)	NA	
	I-1473-V04	Spent Glycol Collection Vessel	None	None	VOC	0.00438 tpy	NA	Insignificant Activity
					HAP	0.00438 tpy (1.0x10 ⁻³ lb/hr)	NA	
	I-1473-V05	Spent Glycol Collection Vessel	None	None	VOC	0.00438 tpy	NA	Insignificant Activity
					HAP	0.00438 tpy (1.0x10 ⁻³ lb/hr)	NA	
Raw Materials Preparation Section (CP2)								
EP72	I-AB17-B-11V01	P-Additive Preparation Tank	None	None	VOC	0.009 tpy	NA	Insignificant Activity
					HAP	0.009 tpy (2.05x10 ⁻³ lb/hr)	NA	
EP73	I-AB17-B-11V02	P-Additive Feed Vessel	None	None	VOC	0.020 tpy	NA	Insignificant Activity
					HAP	0.020 tpy (4.57x10 ⁻³ lb/hr)	NA	
EP74	I-AB18-B-10V01	Blue Toner Preparation Vessel	None	None	VOC	0.002 tpy	NA	Insignificant Activity
					HAP	0.002 tpy (4.57x10 ⁻⁴ lb/hr)	NA	
EP75	I-AB18-B-10V02	U1 Additive Preparation Vessel	None	None	VOC	0.002 tpy	NA	Insignificant Activity
					HAP	0.002 tpy (4.57x10 ⁻⁴ lb/hr)	NA	

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
EP76	I-AB18-B-10V03	Blue Toner Feed Vessel	None	None	VOC	0.009 tpy	NA	Insignificant Activity
					HAP	0.009 tpy (2.05x10 ⁻³ lb/hr)	NA	
EP77	I-AB18-B-10V04	U1 Additive Feed Vessel	None	None	VOC	0.009 tpy	NA	Insignificant Activity
					HAP	0.009 tpy (2.05x10 ⁻³ lb/hr)	NA	
EP71	I-AB15-B-11V01	Catalyst Preparation Vessel	None	None	VOC	0.0385 tpy	NA	Insignificant Activity
					HAP	0.0309 tpy (7.04x10 ⁻³ lb/hr)	NA	
	I-AB15-B-11V02	Catalyst Feed Vessel	None	None	VOC	0.0385 tpy	NA	Insignificant Activity
					HAP	0.0309 tpy (7.04x10 ⁻³ lb/hr)	NA	
EP70	I-AB15-B-11X01	Catalyst Feeding Device	None	None	VOC	0.02 tpy	NA	Insignificant Activity
					HAP	0.0101 tpy (2.31x10 ⁻³ lb/hr)	NA	
EP78	I-AB30-B-12V01	PTA Paste Preparation Tank	None	None	VOC	0.097 tpy	NA	Insignificant Activity
					HAP	0.048 tpy (1.10x10 ⁻² lb/hr)	NA	
Fugitives	F13-P-CP2	CP2 Additive Preparation Section	None	None	VOC	0.647 tpy	NA	Permitted Source
					HAP	0.647 tpy (1,294 lb/yr)	NA	
Continuous Polycondensation Plant 2 (CP2) - Esterification and Polycondensation Processes and Glycol Recovery								
Fugitives	F14-P-CP2	CP2 Process Section	None	None	VOC	1.6364 tpy	NA	Permitted Source
					HAP	1.285 tpy (2,570 lb/yr)	NA	
CP2 Esterification Process								
EP79	I-AB40-B-63V02	Blowdown Vessel	None	None	VOC	0.004 tpy	NA	Insignificant Activity
					HAP	0.0044 tpy (1.00x10 ⁻³ lb/hr)	NA	
EP84	AH20-B-10C01	Stripper Column – vapors from the following in Esterification, Polycondensation, and Glycol Recovery are all routed through this unit	CD-AH20-B-10U01	Natural gas-fired regenerative thermal oxidizer	VOC	750.45 tpy	1.501 tpy	Permitted Source
			OR	OR				
	AB40-B-13R01	Esterification Reactor No. 1	CD-3420-U01	Natural gas-fired thermal oxidizer				
	AB40-B-21R01	Esterification Reactor No. 2						
	AB40-B-41C01	Process Column						
	AB40-B-63E01	Condenser						
	AB40-B-63V01	Reflux Vessel			HAP	687.85 tpy (157 lb/hr)	1.3758 (0.314 lb/hr)	

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
CP2 Polymerization Process								
EP84	AB60-B-63K02	Primary Vacuum Pump	CD-AH20-B-10U01 OR CD-3420-U01	Natural gas-fired regenerative thermal oxidizer	See emissions for the stripper column, above			
	AB60-B-63K03	Backup Vacuum Pump		OR Natural gas-fired thermal oxidizer				
	AH20-B-10V01	Stripper Still						
	AB60-B-63K01	Ethylene Glycol Vapor Jet Ejector						
	AB50-B-30R01	Polymerization Reactor No. 1						
	AB60-B-15R01	Polymerization Reactor No. 2						
	AB50-B-30E01	Scraper Condenser						
	AB60-B-50E01	Scraper Condenser						
	AB40-B-41V01	Spent Ethylene Glycol Collection Vessel						
	AB50-B-60V01	Glycol Immersion Vessel						
	AB60-B-50V01	Glycol Immersion Vessel						
	AB60-B-63V01	Glycol Immersion Vessel						
	AB60-B-63V02	Spent Ethylene Glycol Collection Vessel						
	AB60-B-63E03	Glycol Evaporator						
PET Production								
EP17	I-1493-D01	Granulate Dryer	None	None	PM	0.055 tpy	NA	Insignificant Activity
	I-1493-D02	Granulate Dryer	None	None	PM	0.055 tpy	NA	Insignificant Activity
EP80	I-AB85-B-30U01	Pelletizing Dryer	None	None	PM	0.080 tpy	NA	Insignificant Activity
EP81	I-AB85-B-30U02	Pelletizing Dryer	None	None	PM	0.080 tpy	NA	Insignificant Activity
EP82	I-AB85-B-30U03	Pelletizing Dryer	None	None	PM	0.080 tpy	NA	Insignificant Activity
EP83	I-AB85-B-72T01	Intermediate Chip Silo – particulate from the following feeding stations vent through this unit	None	None	PM	0.0003 tpy	NA	Insignificant Activity
	I-2901-X20A	Feeding Station						Insignificant Activity
	I-2901-X20B	Feeding Station						Insignificant Activity
EP18	I-1493-T01	Chips Silo	None	None	PM	0.055 tpy	NA	Insignificant Activity
EP18	I-2901-X01	Feeding Station	None	None	PM	0.055 tpy	NA	Insignificant Activity

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
EP20	I-2901-V01	Amorphous Chip Storage Silo	I-CD-2901-S101	Fabric Filter	PM	0.068 tpy	0.027 tpy	Insignificant Activity
EP21	I-2901-V02	Amorphous Chip Storage Silo	I-CD-2901-S102	Fabric Filter	PM	0.068 tpy	0.027 tpy	Insignificant Activity
EP23	I-2901-V03	Amorphous Chip Storage Silo	I-CD-2901-S103	Fabric Filter	PM	0.136 tpy	0.055 tpy	Insignificant Activity
EP24	I-2901-X03	Feeding Station	I-CD-2901-S104	Fabric Filter	PM	0.139 tpy	0.055 tpy	Insignificant Activity
EP22	I-2901-V21	Amorphous Chip Storage Silo	I-CD-2901-S121	Fabric Filter	PM	0.110 tpy	0.044 tpy	Insignificant Activity
EP31	I-2901-V22	Amorphous Chips Storage Silo	I-CD-2901-S122	Fabric Filter	PM	0.110 tpy	0.044 tpy	Insignificant Activity
EP86	I-2901-V23	Amorphous Chip Storage Silo	I-CD-2901-S123	Fabric Filter	PM	0.110 tpy	0.044 tpy	Insignificant Activity
EP36	I-2901-X21	Feeding Station	I-CD-2901-S122	Fabric Filter	PM	0.219 tpy	0.0876 tpy	Insignificant Activity
Solid Stating Plant (SSP1)								
EP40	I-1610-T01	Feed Silo	I-CD-1610-S101	Fabric Filter	PM	0.728 tpy	0.291 tpy	Insignificant Activity
EP43	I-1660-A01	Pellet Cooler	I-CD-1660-S01	Cyclone Separator	PM	0.724 tpy	0.152 tpy	Insignificant Activity ¹
	I-1660-T01	Pellet Surge Bin			PM	0.021 tpy	0.004 tpy	Insignificant Activity ¹
	I-2901-X40	Product Discharge Rotary Valve						Insignificant Activity ¹
EP33	I-2901-V41	Product Storage Silo	I-CD-2901-S141	Fabric Filter	PM	0.066 tpy	0.026 tpy	Insignificant Activity
EP56	I-2901-V42	Product Chip Storage Silo	I-CD-2901-S142	Fabric Filter	PM	0.065 tpy	0.026 tpy	Insignificant Activity
EP57	I-2901-V43	Product Chip Storage Silo	I-CD-2901-S143	Fabric Filter	PM	0.066 tpy	0.026 tpy	Insignificant Activity
EP59	I-2901-V44	Product Chip Storage Silo	I-CD-2901-S144	Fabric Filter	PM	0.066 tpy	0.026 tpy	Insignificant Activity
EP60	I-2901-V45	Product Chip Storage Silo	I-CD-2901-S145	Fabric Filter	PM	0.065 tpy	0.026 tpy	Insignificant Activity
EP67	I-2903-V71	Product Storage Silo	I-CD-2903-S171	Fabric Filter	PM	0.091 tpy	0.037 tpy	Insignificant Activity
EP68	I-2903-V72	Product Storage Silo	I-CD-2903-S172	Fabric Filter	PM	0.091 tpy	0.037 tpy	Insignificant Activity
EP42	ES-1610-A01	Crystallizer – vapors from the following reactors are vented through this unit	CD-1610-S04	Cyclone Separator (110-inch diameter)	PM	0.427 tpy	0.171 tpy	Permitted Source

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
	ES-1630-R01	Preheater ²			VOC	5.079 tpy	NA	
	ES-1640-R01	Solid State Polycondensation Reactor ²			HAP	5.079 tpy (1.16 lb/hr)	NA	
Solid Stating Plant (SSP2)								
EP52	I-1805-T01	Feed Silo	I-CD-1805-S101	Fabric Filter	PM	0.197 tpy	0.079 tpy	Insignificant Activity
EP54	I-1860-A01	Pellet Cooler	I-CD-1860-S01	Cyclone Separator	PM	0.657 tpy	0.125 tpy	Insignificant Activity ¹
					VOC	0.167 tpy	NA	
					HAP	0.167 tpy (0.0381 lb/hr)	NA	
	I-1860-T01	Pellet Surge Bin			PM	0.023 tpy	0.004 tpy	Insignificant Activity ¹
	I-2901-X60	Rotary Valve						Insignificant Activity ¹
EP32	I-2901-V61	Product Storage Silo (Off-Spec)	I-CD-2901-S161	Fabric Filter	PM	0.066 tpy	0.026 tpy	Insignificant Activity
EP58	I-2901-V62	Product Chip Storage Silo	I-CD-2901-S162	Fabric Filter	PM	0.065 tpy	0.026 tpy	Insignificant Activity
EP55	I-2901-V63	Product Chip Storage Silo	I-CD-2901-S163	Fabric Filter	PM	0.066 tpy	0.026 tpy	Insignificant Activity
EP53	ES-1805-A01	Precrystallizer – vapors from preheater and reactor are vented through the precrystallizer. Chip dust from the feed silo is vented through the cyclone	CD-1805-S01	Cyclone (47 inches in diameter)	PM	0.705 tpy	0.071 tpy	Permitted Source
	ES-1810-T01	Feed Silo ³			VOC	2.421 tpy	2.421 tpy	
	ES-1830-R01	Preheater ³			HAP	2.421 tpy	2.421 tpy	
	ES-1840-R01	Solid State Polycondensation Reactor ³						
	ES-1840-R02	Solid State Polycondensation Reactor ³						

² This emission source is fully enclosed and does not emit directly to the atmosphere. Emissions are included in total Crystallizer emissions.

³ This emission source is fully enclosed and does not emit directly to the atmosphere. Emissions are included in total Precrystallizer emissions.

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
Pellet Handling and Loading								
EP62	I-2902-S11	Loading Station Separator	I-CD-2902-S12, I-CD-2902-S111	Cyclone and Fabric Filter	PM	0.210 tpy	0.084 tpy	Insignificant Activity
EP63	I-2902-S21	Loading Station Separator	I-CD-2902-S22, I-CD-2902-S121	Cyclone and Fabric Filter	PM	0.210 tpy	0.084 tpy	Insignificant Activity
EP65	I-2902-A11	Deduster Cyclone	I-CD-2902-S13	Cyclone	PM	0.126 tpy	0.0504 tpy	Insignificant Activity
EP66	I-2902-A21	Deduster Cyclone	I-CD-2902-S23	Cyclone	PM	0.126 tpy	0.0504 tpy	Insignificant Activity
EP69	I-2904-K02	Reprocessing Chips Unloading and Transfer System Vacuum Blower	I-CD-2904-S04	Fabric Filter	PM	0.080 tpy	0.032 tpy	Insignificant Activity
	<i>I-2904-S01</i>	<i>Reprocessing Chips Unloading and Transfer System Transfer Cyclone⁴</i>						Insignificant Activity
	<i>I-2904-S02</i>	<i>Reprocessing Chips Unloading and Transfer System Vacuum Receiver Filter⁴</i>						Insignificant Activity
EP26	I-1205-T01	Reprocessing Chips Storage Silo	I-CD-1205-S101	Fabric Filter	PM	0.0193 tpy	0.0077 tpy	Insignificant Activity
EP90	I-AB12-B-11T01	Recycling Chip Storage Silo	I-CD-AB12-B-11S101	Fabric Filter	PM	0.012 tpy	0.0048 tpy	Insignificant Activity
EP19	I-1323-S01	Waste Chips Weigh Feeder	None	None	PM	0.0438 tpy	NA	Insignificant Activity ⁵
EP15	I-1325-T01	Reprocessing Chips Day Silo	I-CD-1325-S101	Fabric Filter	PM	0.0072 tpy	0.0029 tpy	Insignificant Activity
Heat Transfer Media System								
EP25	ES-3017-F01	HTM Heater No. 1: Natural gas-fired process heater	None	None	PM	1.04 tpy	NA	Permitted Source
					PM ₁₀ ⁶	1.04 tpy	NA	
					PM _{2.5}	1.04 tpy	NA	
					SO ₂	0.08 tpy	NA	
					NO _x	13.74 tpy	NA	
					CO	11.54 tpy	NA	
					VOC	0.76 tpy	NA	

⁴ Emissions from this source are included in the Vacuum Blower Emissions.

⁵ This source was not listed on the insignificant activities list or the current permit (R11). Since potential uncontrolled PM emissions are less than 5 tpy, this source will be listed as an insignificant activity.

⁶ PM₁₀ emissions were not provided in the application forms, however, since PM_{2.5} is a subset of PM₁₀, and since PM emissions equal PM_{2.5}, PM₁₀ are assumed equal to PM and PM_{2.5}.

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
	ES-3017-F02	HTM Heater No. 2: Natural gas-fired process heater	None	None	HAP	0.259 tpy	NA	Permitted Source
					PM	1.04 tpy	NA	
					PM ₁₀ ⁶	1.04 tpy	NA	
					PM _{2.5}	1.04 tpy	NA	
					SO ₂	0.08 tpy	NA	
					NO _x	13.74 tpy	NA	
					CO	11.54 tpy	NA	
					VOC	0.76 tpy	NA	
	ES-3017-F03	HTM Heater No. 3: Natural gas-fired process heater	None	None	HAP	0.259 tpy	NA	Permitted Source
					PM	1.04 tpy	NA	
					PM ₁₀ ⁷	1.04 tpy	NA	
					PM _{2.5}	1.04 tpy	NA	
					SO ₂	0.08 tpy	NA	
					NO _x	13.74 tpy	NA	
					CO	11.54 tpy	NA	
					VOC	0.76 tpy	NA	
EP27	I-3017-V01	HTM Tank	I-CD-3017-E02	Air-Cooled Fin-Type Vent Condenser	VOC	0.535 tpy	0.0055 tpy	Insignificant Activity
	I-3017-V04	HTM Drain Vessel	I-CD-3017-E02	Air-Cooled Fin-Type Vent Condenser	VOC	0.535 tpy	0.0055 tpy	Insignificant Activity
	I-3057-V01	HTM Liquid Collection Vessel	I-CD-3017-E02	Air-Cooled Fin-Type Vent Condenser	VOC	0.535 tpy	0.0055 tpy	Insignificant Activity
	I-3057-V02	HTM Liquid Collection Vessel	I-CD-3017-E02	Air-Cooled Fin-Type Vent Condenser	VOC	0.535 tpy	0.0055 tpy	Insignificant Activity
	I-XA40-B-50V01	HTM Drain Vessel	I-CD-3017-E02	Air-Cooled Fin-Type Vent Condenser	VOC	0.535 tpy	0.0055 tpy	Insignificant Activity
EP28	I-3087-V01	HTM Vapor Collecting Vessel	No. I-CD-3087-E01	Shell and Tube-Type Water-Cooled Vent Condenser	VOC	0.241 tpy	0.005 tpy	Insignificant Activity

⁷ PM₁₀ emissions were not provided in the application forms, however, since PM_{2.5} is a subset of PM₁₀, and since PM emissions equal PM_{2.5}, PM₁₀ are assumed equal to PM and PM_{2.5}.

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
EP87	I-XA40-B-30V01	HTM Vapor Collecting Vessel	I-CD-XA40-B-30E01	Water-Cooled Shell and Tube-Type Condenser	VOC	0.100 tpy	0.002 tpy	Insignificant Activity
Fugitives	I-F14-H-CP1	CP1 HTM Section Fugitives	None	None	VOC	0.099 tpy	NA	Insignificant Activity
Fugitives	I-F14-H-CP2	CP2 HTM Section Fugitives	None	None	VOC	0.0089 tpy	NA	Insignificant Activity
Miscellaneous Process Operations								
EP35	I-3851-E01	CP1 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0003 tpy	NA	
					VOC	0.0511 tpy	NA	
					HAP	0.0511 tpy	NA	
	I-3851-E02	CP1 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0003 tpy	NA	
					VOC	0.0511 tpy	NA	
					HAP	0.0511 tpy	NA	
	I-3851-E03	CP1 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0003 tpy	NA	
					VOC	0.0511 tpy	NA	
					HAP	0.0511 tpy	NA	
EP91	I-3852-E01	CP2 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0004 tpy	NA	
					VOC	0.0575 tpy	NA	
					HAP	0.0575 tpy	NA	
	I-3852-E02	CP2 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0004 tpy	NA	
					VOC	0.0575 tpy	NA	
					HAP	0.0575 tpy	NA	
	I-3852-E03	CP2 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0004 tpy	NA	
					VOC	0.0575 tpy	NA	
					HAP	0.0575 tpy	NA	
	I-3852-E04	CP2 Cooling Tower	None	None	PM ⁸	0.0004 tpy	NA	Insignificant Activity
					PM ₁₀	0.0004 tpy	NA	
					VOC	0.0575 tpy	NA	

⁸ PM emissions were not provided in the application forms, however, since PM₁₀ is a subset of PM, PM are assumed equal to PM₁₀.

Table 1 (continued)

Emission Point	Emission Source ID No.	Emission Source Description	Control System ID	Control System Description	Pollutant	Uncontrolled Emissions	Controlled Emissions	Emission Point Type
EP29	I-3900-B01	Boiler No. 1, Natural gas-fired	None	None	HAP	0.0575 tpy	NA	Insignificant Activity
					PM	0.05 tpy	NA	
					PM ₁₀ ⁹	0.05 tpy	NA	
					PM _{2.5}	0.05 tpy	NA	
					SO ₂	0 tpy	NA	
					NO _x	0.72 tpy	NA	
					CO	0.6 tpy	NA	
					VOC	0.04 tpy	NA	
	I-3900-B02	Boiler No. 2, Natural gas-fired	None	None	HAP	0.0135 tpy	NA	Insignificant Activity
					PM	0.05 tpy	NA	
					PM ₁₀ ⁹	0.05 tpy	NA	
					PM _{2.5}	0.05 tpy	NA	
					SO ₂	0 tpy	NA	
					NO _x	0.72 tpy	NA	
					CO	0.6 tpy	NA	
					VOC	0.04 tpy	NA	
EP37	I-5000-V01	Part Cleaner	None	None	VOC	0.0977 tpy	NA	Insignificant Activity ¹
EP38	I-5000-V02	Diesel Fuel Storage Tank	None	None	VOC	1.41x10 ⁻⁵ tpy	NA	Insignificant Activity
					HAP	5.65x10 ⁻⁹ tpy	NA	

⁹ PM₁₀ emissions were not provided in the application forms, however, since PM_{2.5} is a subset of PM₁₀, and since PM emissions equal PM_{2.5}, PM₁₀ are assumed equal to PM and PM_{2.5}.

phosphoric acid, are prepared for use in the esterification process. Catalysts also prepared to be added to promote the polycondensation reaction. Similar to the raw materials storage section, most of the process vessels and tanks in the raw materials preparation section are considered insignificant activities, except for fugitive emissions, which will be included in the permit.

C. Continuous Polycondensation Plant 1 (CP1)

The PET production process occurs in the continuous polycondensation plant (CP1). StarPet is permitted to process 330 tons of product per day in CP1. The process consists of esterification, polycondensation and glycol recovery. The fugitive emissions shown in Table 1 from the CP1 Process Section include fugitive emissions from paste preparation (see Raw Materials Preparation Section, above), esterification stage, polymerization stage, and final production section. The HAP emissions are greater than 1,000 lb/yr (0.5 tpy) and therefore, the fugitives from the CP1 Process Section will be included in the permit.

1. CP1 Esterification Process

The esterification process consists of the following primary systems:

- Esterification reaction
- Process column system
- Process water stripping

The chemical reaction to produce a monomer (DGT) occurs in the esterification process. The main function of the esterification process is to react TPA and glycol at low overpressure and high temperature to attain a uniform product. The system consists of reactors, agitators, and a vapor line system. Vapors from the reactors are fed to the process column. The process column is used to separate low and high boiling point compounds (primarily water and glycol). The stripper removes the remaining esterification reaction byproducts from the condensate.

The equipment included in the CP1 Esterification process is presented in Table 1. StarPet operates two thermal oxidizers to control emissions from the three primary emission points in the CP1 Esterification Process: the Vapor Condenser, the Reflux Vessel, and the Stripper Column. The facility is permitted to use either oxidizer to control CP1 sources. The remaining emission sources in the Esterification Process are ultimately routed through one of these three emission points prior to being routed to the oxidizer.

2. CP1 Polymerization Process

The polymerization reaction initiated in esterification is continued in the polymerization process. The polymerization process includes the following:

- Prepolycondensation
- Polycondensation

In prepolycondensation, a low molecular weight PET intermediate is formed. Glycol vapors from the reactor are condensed and returned to the process column in the esterification section. The low molecular weight PET is then further polycondensed in the Disc Ring Reactor to form a high molecular weight PET. Glycol vapors from the reactor are condensed and fed back to the paste preparation vessels in the raw materials preparation section. The primary emission point in the polymerization process is the Vacuum Pump System. The system is considered a closed system and all remaining emission sources in the polymerization process are vented through the Vacuum Pump System and routed to one of the thermal oxidizers for control.

3. CP1 Glycol Recovery

Glycol-containing vapors from the Prepolycondensation Reactor and the Disc Ring Reactor are recovered and condensed. Glycol recovered from the Prepolycondensation Reactor is returned to the process column. Glycol from the Disc Ring Reactor is condensed and pumped back to the paste preparation tank. The collection vessels in Glycol Recovery are insignificant activities.

D. Continuous Polycondensation Plant 2 (CP2)

The Continuous Polycondensation Plant 2 (CP2) is permitted to process 550 tons of material per day. The process for CP2 is similar to CP1 and consists of esterification, polycondensation, and glycol recovery. The fugitive emissions shown in Table 1 from the CP2 Process Section include fugitive emissions from paste preparation (see Raw Materials Preparation Section, above), esterification stage, polymerization stage, and final production section. The HAP emissions are greater than 1,000 lb/yr (0.5 tpy) and therefore, the fugitives from the CP2 Process Section will be included in the permit.

1. CP2 Esterification Process

The general esterification process for CP2 is the same as CP1 and consists of the following primary systems:

- Esterification reaction
- Process column system
- Process water stripping

The esterification process consists of reactors, agitators, and a vapor line system. The equipment included in the CP2 Esterification process is presented in Table 1. The emissions from the primary emission point in the CP2 Esterification Process, the Stripper Column, are routed to one of the two thermal oxidizers for control. The facility is permitted to use either oxidizer to control CP2 sources. The remaining emission sources in the CP2 Esterification Process are ultimately routed through the Stripper Column prior to being routed to the oxidizer.

2. CP2 Polymerization Process

The CP2 polymerization process includes the following:

- Prepolycondensation
- Polycondensation

The CP2 Polymerization Process is essentially the same as CP1. The CP2 process system is considered a closed system and all emission sources in the polymerization process are vented through the Stripper Column and routed to one of the thermal oxidizers for control.

3. CP2 Glycol Recovery

The glycol recovery process in CP2 is the same as CP1, except that all of the sources emissions are vented through the Stripper Column and controlled in one of the oxidizers.

E. PET Production

Final PET production is carried out on two separate lines. One line is fed product from the CP1 process line to produce amorphous chips. The second line produces amorphous chips and industrial grade yarn. The following process are essentially the same for both process lines:

- Extrusion

- Pelletization
- Chips Conveying and Storage

Product from the polycondensation process is melted at a monitored viscosity, filtered and extruded and formed into strands or pelletized. The PET strands are cooled and cut into chips and then dried before being collected in a chip silo. The PET from CP2 is pelletized, cooled, dewatered, and dried. The chips are then collected in a chip silo. Amorphous PET chips are conveyed to PET silos and fed to the solid stating plants. As shown in Table 1, the primary pollutant emitted from PET Production is particulate matter. All of the sources have uncontrolled PM emissions less than 5 tpy and are considered insignificant activities.

F. Solid Stating Plants (SSP1 and SSP2)

StarPet operates two solid stating plants (SSP1 and SSP2). They are permitted to operate SSP1 at 550 tons per day and SSP2 is permitted to operate at 330 tons per day. The two SSP lines consist of essentially the same four steps:

- Crystallization
- Preheating
- Solid state polycondensation
- Cooling

Amorphous PET pellets are heated using hot air in the crystallizer. Temperature and residence time determines the degree of crystallinity. Pellets then are fed to the preheater where they are heated with hot dry nitrogen. Preheated pellets are conveyed to the solid state polycondensation reactor. In the solid state reactor, hot nitrogen passes the pellets counter-currently to promote the solid state polycondensation reaction. The hot nitrogen removes water and ethylene glycol from the pellets, along with residual acetaldehyde. The ethylene glycol and acetaldehyde are subsequently removed from the nitrogen stream, converted to water and carbon dioxide in a catalytic converter, removed using a molecular sieve and sent to the wastewater sewer. Pellets are then cooled, which halts the polycondensation process and fixes the material properties as desired. Cooled pellets are then transferred to storage silos for distribution.

In SSP1, vapors from the preheater and solid state polycondensation reactor are routed to the crystallizer, resulting in VOC and HAP emissions from the crystallizer. The crystallizer is also a source of PM emissions and is controlled by a cyclone separator.

In SSP2, vapors from the preheater and reactor are vented through the precrystallizer. Chip dust from the feed silo is vented through the precrystallizer cyclone. As shown in Table 1, the HAP emissions from the precrystallizer are greater than 1,000 lb/yr, and therefore, the precrystallizer will be included in the permit.

G. Pellet Handling & Loading

Pellet handling and loading include the following areas:

- Loading Station 1
- Loading Station 2
- Reprocessing Chips Unloading and Transfer System

In this section, product from the SSP lines is transferred to silos, and then onto rail car loading stations. Dust is separated from the pellets prior to being loaded to the rail cars. In addition, some PET chip recycling occurs at the StarPet plant. Chips are unloaded from the railcars and transferred to SSP1 and SSP2 silos. As shown in Table 1, uncontrolled PM emissions from the equipment in Pellet Handling and Loading are less than 5 tpy and these units are insignificant activities.

H. Heat Transfer Medium System

The Heat Transfer Medium (HTM) system supplies the StarPet facility with its process heat. Three boilers combust natural gas to oil, which is used as a heat transfer medium. Heat from the HTM system is supplied to the esterification, polymerization, and glycol recovery equipment in both CP1 and CP2. The system also consists of tanks to collect the HTM, as well as vessels to collect HTM vapors from elsewhere in the process. The three HTM heaters emit PM, PM₁₀, PM_{2.5}, SO₂, NO_x, CO, VOC, and HAP, with NO_x and CO emissions greater than 5 tpy (see Table 1). Therefore, these units will be included in the permit. Each of the tanks and process vessels in the HTM System emit less than 5 tpy of VOC and are insignificant activities.

I. Miscellaneous Process Operations

Miscellaneous processes at the StarPet facility include seven cooling towers in the continuous polycondensation plant areas (3 towers in CP1 and 4 towers in CP2), two natural gas-fired boilers, a part cleaner, and a diesel fuel storage tank. The cooling towers provide cooled process water in various areas of the plant. The boilers are used to heat the “low freezing point vessels” in the HTM section during winterization. Diesel fuel is stored onsite for filling vehicles and occasionally locomotives used for railcar delivery and sales. As shown in Table 1, all of the miscellaneous process operations are insignificant activities.

III. Permit History/Application Chronology

A. Permit History since Last Permit Renewal

April 21, 2014	Synthetic Minor Permit was renewed. Air Permit No. 08157R09 was issued with an expiration date of March 31, 2022.
June 29, 2016	Air Permit No. 08157R10 was issued for a proposed construction project to increase the size of the standby thermal oxidizer.
August 15, 2016	Air Permit No. 08157R11 was issued as an administrative amendment to correct the permit class of the facility. Permit R10 was issued with StarPet being identified as a “synthetic minor” facility and R11 corrected the permit class to Title V.

B. Application Chronology

December 6, 2013	DAQ received permit application for Title V Permit.
December 6, 2013	DAQ sent acknowledgement letter indicating that the application for a Title V Permit was complete.
January 9, 2014	Comments and recommendations on the air permit application were received from Robert Barker, of the Winston-Salem Regional Office.
March 17, 2015	Brian Bland, in DAQ Central Office, emailed Mr. Durgesh Kushwaha, with StarPet, to request additional information.
April 14, 2015	StarPet submitted an amendment to the December 2013 permit application containing the additional information requested March 2015.

September 28, 2015	Permit application transferred to Heather Sands, in DAQ Central Office, for processing.
April 20, 2016	StarPet received a notice of violation (NOV) and notice of recommendation for enforcement (NRE) related to the failure of the facility's thermal oxidizer.
June 17, 2016	Ms. Sands conducted a site visit to StarPet to tour the facility and learn about the process.
August 24, 2016	Ms. Sands emailed Mr. Kushwaha to request additional information.
August 29, 2016	Michael Pjetraj, in DAQ Technical Services Section, sent StarPet a letter requesting additional information related to the NOV.
August 31, 2016	StarPet submitted an amendment to the December 2013 permit application containing the additional information requested on August 24 th .
October 14, 2016	StarPet participated in a meeting with members of DAQ staff to discuss the August Additional Information Request.
February 7, 2017	Draft permit was submitted to facility and regional office for review.
XXXX YY, 2017	Draft permit sent to public notice.
XXXX YY, 2017	Public comment period ends. <i>Add comments received</i>
XXXX YY, 2017	Comment received from Blue Ridge Paper. <i>Add comments received</i>
XXXX YY, 2017	EPA comment period ends. <i>Add comments received</i>
XXXX YY, 2017	Permit issued.

IV. Permit Modifications

Table 2 describes the changes to the current permit.

Table 2. Summary of Changes to Permit

Pages	Section	Description of Changes
Cover and throughout	All	Updated all dates and permit revision numbers. Converted permit format from a State permit to a Title V permit.
N/A	N/A	Removed the Synthetic Minor permit stipulation and associated operation restrictions, recordkeeping requirements, and reporting requirements.
N/A	N/A	Removed 15A NCAC 02D .0540, as this permit condition is found in Section MM of the General Conditions.
N/A	N/A	Removed Air Pollutant Emissions Limitation Requirement to be consistent with current permit language, this condition is not included unless Toxics permitting is triggered.

Pages	Section	Description of Changes
Attachment	Insignificant Activities	<ul style="list-style-type: none"> - The Feeding Station (ID No. I-2901-X01) was listed in the permit R11 as having a fabric filter. In email dated August 31, 2016, the Permittee confirmed that this emission source is not equipped with a fabric filter. - IPA Weigh Feeder (ID No. I-1303-W01) was listed in the permit R11 as not being equipped with a fabric filter. Forms indicate that there is a fabric filter associated with this emission source and it was added to the insignificant activity list. - Updated fabric filter and cyclone specifications in table to be consistent with information provided by StarPet. - Removed the Deduster (ID No. I-2902-S13). This is actually the control device for the Deduster (ID No. I-2902-A11, EP65). - Removed the Deduster (ID No. I-2902-S23). This is actually the control device for the Deduster (ID No. I-2902-A21, EP66).
Attachment	Insignificant Activities	Moved MEG, DEG, SEG Storage tanks (ID Nos. I-1107-T01, I-1107-T02, I-1107-T03, I-1115-V01, I-1115-V02, I-1199-T01, I-1574-V01, I-1574-V02) to insignificant activities list.
Attachment	Insignificant Activities	Moved SSP1 Pellet Cooler, Pellet Surge Bin, and Product Discharge Rotary Valve (ID Nos. I-1660-A01, I-1660-T01, I-2901-X40) to insignificant activities list.
Attachment	Insignificant Activities	Removed Bagging Station Separator and Loading Station (ID Nos. I-2902-S03 and I-2902-S04) from table. According to email received February 21, 2017, this source has been taken offline and removed. [NOTE: the source I-2902-S04 was initially on the insignificant activities list as an emission source, but was actually the control device for the Bagging Station Separator.]
Attachment	Insignificant Activities	Added fabric filter as an additional control device on Loading Station Separators (ID Nos. I-2902-S11 and I-2902-S21). According to email received February 21, 2017, StarPet added the fabric filters for additional control.
N/A	N/A	Added new units associated with CP2 EP84: Stripper Still (ID No. AH20-B-10V01), Scraper Condensers (ID Nos. AB50-B-30E01 and AB60-B-50E01), Spent Ethylene Glycol Collection Vessel (ID Nos. AB40-B-41V01, AB60-B-63V02), Glycol Immersion Vessels (ID Nos. AB50-B-60V01, AB60-B-50V01, and AB60-B-63V01), and Glycol Evaporator (ID No. AB60-B-63E03)
N/A	N/A	Added new units associated with CP1 EP1: Scraper Condensers (ID Nos. ES-1463-E01 and ES-1433-E01), Glycol Evaporator (ID No. ES-1473-E03)
N/A	N/A	Changed SSP1 equipment names from polycondensation reactors to preheater and solid state polycondensation reactor (ES-1630-R01 and ES-1640-R01, respectively).
N/A	N/A	Removed 15A NCAC 02D .0958: Work Practices for Sources of Volatile Organic Compounds – regulation no longer applies statewide.

According to their permit application, several of the sources listed on their current permit (R11) have potential uncontrolled emissions of particulate, SO₂, NO_x, VOC and CO less than 5 tpy and HAP emissions less than 1,000 pounds per year (lb/yr) and are considered insignificant activities under 02Q .0503(8). These sources are identified in Table 1, above and will be moved to the insignificant activities list. One of the sources identified in Table 1, the Waste Chips Weigh Feeder (ID No. I-1323-S01, EP19), was not previously listed on the permit or insignificant activities list. As shown in Table 1, potential uncontrolled PM emissions from this source are less than 5 tpy. Therefore, the Waste Chips Weigh Feeder will be listed as an insignificant activity on the Title V Permit (T12).

V. Regulatory Review – State Rules

StarPet is subject to the State regulations discussed below. An extensive review for each applicable regulation is not included in this review, as the facility's status with respect to these regulations has not

changed from the current permit (R11). For some of these regulations, some additional discussion is included, as needed, to provide additional clarification and/or background. The permit will be updated to reflect the most current permit language for all applicable regulations.

A. 15A NCAC 02D .0503: Particulates from Fuel Burning Indirect Heat Exchangers

This rule applies to particulate matter emissions from the combustion of fuel that are discharged from any stack or chimney into the atmosphere. The regulation provides the following equation to be used to determine the allowable emissions limit in terms of maximum heat input:

$$E = 1.090 \times Q^{-0.2594}$$

Where:

E = allowable emissions limit for particulate matter in lb/million Btu; and

Q = maximum heat input in million Btu/hr.

The maximum heat input is the sum of maximum heat input of all fuel burning indirect heat exchangers at a plant site which are in operation, under construction, or permitted when determining the allowable emission limit for each fuel burning indirect heat exchanger, including insignificant activities. The following indirect heat exchangers are located at the StarPet plant:

- HTM Heater No. 1 (ID No. ES-3017-F01) – Natural gas-fired process heater (32 million Btu per hour maximum firing rate)
- HTM Heater No. 2 (ID No. ES-3017-F02) – Natural gas-fired process heater (32 million Btu per hour maximum firing rate)
- HTM Heater No. 3 (ID No. ES-3017-F03) – Natural gas-fired process heater (53 million Btu per hour maximum firing rate)
- Boiler No. 1 (ID No. I-3900-B01) - Natural Gas-fired with 1.675 million Btu per hour heat input capacity (EP29)
- Boiler No. 2 (ID No. I-3900-B02) - Natural Gas-fired with 1.675 million Btu per hour heat input capacity (EP29)

The total heat input of all indirect heat exchangers is 120.4 million Btu per hour. Therefore, using the equation above, the PM limit is 0.315 pounds per million Btu (lb/million Btu). The PM limit in the existing Permit (R11) was 0.31 for HTM Heater Nos. 1 through 3. However, as discussed the emission limit calculated above is 0.315 lb/million Btu and when rounded to two decimal places to be consistent with the rule under this permit action.

Due to the inherently low emissions associated with firing natural gas, no control is necessary for the HTM Heaters to comply with this limit. No testing, monitoring, recordkeeping, and reporting is required for these indirect heat exchangers and compliance is expected.

B. 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes

This rule applies to stacks, vents, or outlets emitting particulates from industrial processes with no other applicable standards. The allowable emission rate is in terms of pounds per hour and is calculated using the following equation:

For process rates up to 30 tons per hour:

$$E = 4.10(P)^{0.67}$$

For process rates greater than 30 tons per hour:

$$E = 55.0(P)^{0.11} - 40$$

Where:

- E = Allowable emission rate in pounds per hour
 P = Process weight in tons per hour

The following emission sources are subject to regulation under 02D .0515:

- Solid Stating Plant 1 (SSP1), with a process rate of 550 tons per day (22.9 tons per hour) and consisting of:
 - Crystallizer (ID No. ES-1610-A01) controlled by cyclone separator (ID No. CD-1610-S04)
 - Preheater (ID No. ES-1630-R01)
 - Solid State Polycondensation Reactor (ID No. ES-1640-R01)

The entire system is closed and the preheater and solid state polycondensation reactors are not ducted directly to the atmosphere. Emissions from the entire system are accounted for in total Crystallizer emissions.
- Solid Stating Plant 2 (SSP2), with a process rate of 330 tons per day (13.8 tons per hour) and consisting of:
 - Precrystallizer (ID No. ES-1805-A01) and Feed Silo (ID No. ES-1810-T10) controlled by a cyclone (ID No. CD-1805-S01)
 - Preheater and Solid State Polycondensation Reactors (ID Nos. ES-1830-R01, ES-1840-R01, ES-1840-R02)

The entire system is closed and the preheater and solid state polycondensation reactors are not ducted directly to the atmosphere. Emissions from the entire system are accounted for in total Precrystallizer emissions.

Both solid stating plants (SSP1 and SSP2) have process rates less than 30 tons per hour, therefore, the equation for process rates up to 30 tons per hour will be used to calculate the allowable PM limit. For SSP1, the allowable limit would be 33.4 pounds per hour. The allowable limit for SSP2 would be 23.8 pounds per hour.

Particulate emissions from the Crystallizer in SSP1 and the precrystallizer and feed silo in SSP2 are controlled using cyclones (ID Nos. CD-1610-S04 and CD-1805-S01, respectively). Compliance is demonstrated by monthly visual inspection of ductwork, annual internal cyclone inspection, maintenance, recordkeeping, and reporting.

According to their permit application, the uncontrolled potential PM emissions from the crystallizer in SSP1 are 0.098 lb/hr and from the precrystallizer and feed silo in SSP2 are 0.161 lb/hr. Therefore, due to the large margin of compliance between the potential emissions and the allowable limits, compliance is expected and production records are not required.

C. 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources

This regulation applies to any source of combustion that emits sulfur dioxide, which is formed by the combustion of sulfur in fuels, wastes, ores, and other substances. Sources subject to this standard have an emission limit of 2.3 pounds of sulfur dioxide per million BTU heat input.

This rule does not apply to sources subject to sulfur dioxide emission standards in NSPS and MACT standards under 02D .0524 and .1111, respectively. The natural gas-fired HTM heaters are subject to recordkeeping requirements under NSPS Subpart Dc; however, NSPS Subpart Dc does not have sulfur dioxide emissions standards for natural gas-fired process heaters. Therefore, the HTM heaters are subject to 02D .0516. There are no monitoring, recordkeeping, or reporting is required for these sources. Due to the inherently low sulfur content of natural gas, compliance is expected.

D. 15A NCAC 02D .0521: Control of Visible Emissions

This regulation applies to fuel burning operations and industrial processes where visible emissions can be reasonably expected to occur. Sources subject to visible emissions standards under specifically identified rules under 02D (including .0508, .0524, or .1111) are required to meet the standards of those rules instead of the standards in 02D .0521. There are no sources at StarPet that are subject to visible emissions standards under 02D .0508, .0524, or .1111.

Sources manufactured prior to July 1, 1971, have a visible emissions limit of 40 percent opacity when averaged over a 6-minute period. Sources manufactured after July 1, 1971, have a visible emissions limit of 20 percent opacity when averaged over a 6-minute period. The 6-minute averaging periods may exceed 20 percent if no 6-min periods exceed 87 percent opacity, no more than one six-minute period exceeds 20 percent opacity in one hour, and no more than 4 6-minute periods exceed 20 percent in any 24-hour period.

The following emission sources are subject to 02D .0521:

- HTM Heaters Nos. 1 through 3 (ID Nos. ES-3017-F01, ES-3017-F02, and ES-3017-F03) - Natural gas-fired process heaters with maximum firing rates of (32 million Btu/hr, 32 million Btu/hr, and 53 million Btu/hr, respectively).

The permit will contain a condition requiring the HTM heaters to comply with 02D .0521. However, the HTM heaters are natural gas-fired units and visible emissions are expected to be very low from these units. Therefore, no monitoring, recordkeeping, and reporting will be required to demonstrate compliance with the visible emissions standards.

- Solid Stating Plant 1 (SSP1) – consisting of the following sources:
 - Crystallizer (ID No. ES-1610-A01) controlled by cyclone separator (ID No. CD-1610-S04)
 - Preheater (ID No. ES-1630-R01)*
 - Solid State Polycondensation Reactor (ID No. ES-1640-R01)*

*NOTE: The entire system is closed and these sources are not ducted directly to the atmosphere. Emissions from the entire system are accounted for in total Crystallizer emissions.
- Solid Stating Plant 2 (SSP2) – consisting of the following sources:
 - Precrystallizer (ID No. ES-1805-A01) and Feed Silo (ID No. ES-1810-T10) controlled by a cyclone (ID No. CD-1805-S01)
 - Preheater (ID No. ES-1830-R01) and Solid State Polycondensation Reactors (ID Nos. ES-1840-R01, ES-1840-R02)*

*NOTE: The entire system is closed and these sources are not ducted directly to the atmosphere. Emissions from the entire system are accounted for in total Precrystallizer emissions.

The SSP plants are sources of PM emissions with a potential for visible emissions. The margin of compliance between the PM limit and the potential PM emissions is quite large (see Section V.B, above). Therefore, monthly inspections of the cyclones, along with recordkeeping and reporting will be required in the permit to demonstrate compliance with the 20 percent opacity standard in 02D .0521. Compliance is expected.

E. 15A NCAC 02D .0524: New Source Performance Standards

StarPet is subject to the following new source performance standards (NSPS) under 40 CFR Part 60:

- Subpart Dc – The HTM Heaters are subject to the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units.
- Subpart DDD – CP1 and CP2 are subject to the NSPS for Volatile Organic Compound Emissions from the Polymer Manufacturing Industry.

See Section VI.A, below, for a detailed discussion regarding NSPS requirements.

F. 15A NCAC 02D .0958: Work Practices for Sources of Volatile Organic Compounds

This regulation applies to all facilities that use volatile organic compounds as solvents, carriers, material processing media, or industrial chemical reactants, or in other similar uses, or that mix, blend, or manufacture volatile organic compounds, or emit volatile organic compounds as a product of chemical reactions. A permit condition for this regulation is included in the current permit (R11). However, effective November 1, 2016, 02D .0958 no longer applies statewide. According to 15A NCAC 02D .0902, 02D .0958 applies to facilities located in nonattainment areas. StarPet is located in Randolph County, which is designated as attainment. Therefore, 02D .0958 no longer applies and will not be included in the Title V permit (T12).

G. 15A NCAC 02D .1111: Maximum Achievable Control Technology

StarPet is subject to the following national emission standards for hazardous air pollutants (NESHAP) under 40 CFR Part 63:

- Subpart VVVVVV (6V) – The continuous polycondensation plants (CP1 and CP2) are considered chemical manufacturing process units and are subject to the NESHAP for Chemical Manufacturing Area Sources (CMAS).

See Section VI.B, below, for a detailed discussion regarding NESHAP requirements.

H. 15A NCAC 02D .1100:

This regulation applies to facilities that emit a toxic air pollutant (TAP) that is required to have a permit under 15A NCAC 02Q .0700. StarPet is not required to have a permit for TAP emissions. See Section V.I, below for the analysis to determine whether a permit would be required.

State Only Requirements

I. 15A NCAC 02Q .0711: Emission Rates Requiring a Permit

Facilities are required under this regulation to receive a permit to emit toxic air pollutants (TAP) where actual emissions are greater than the TAP Permitting Emission Rate (TPER). Table 3 provides a summary of actual facility-wide TAP emissions reported in the 2015 annual emission inventory, along with the associated TPER. The emissions provided in Table 3 do not distinguish between sources subject to MACT and/or GACT, combustion sources, or any other sources exempt from the requirement to obtain a permit to emit TAP. Therefore, this table provides a conservative demonstration, showing that even when including emissions from the exempt sources, a permit is not required.

J. 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

Under this regulation, a facility cannot be operated without implementing management practices or installing and operating odor control equipment to prevent odorous emissions from causing or

Table 3. Comparison of StarPet Actual Emissions from 2015 Annual Emission Inventory to Associated TPERs

Pollutant	2015 Actual Emissions (lb/yr)	TPER	2015 Actual Emissions in units of TPER	Permit Required? (Yes or No)
Acetaldehyde	11,288.70	6.8 lb/hr	1.3 lb/hr	No
Acetic acid	293.75	0.96 lb/hr	0.034 lb/hr	No
Ammonia	1,701.40	0.68 lb/hr	0.19 lb/hr	No
Benzene	1.12	8.1 lb/yr	1.1 lb/yr	No
Benzo(a)pyrene	0.00	2.2 lb/yr	0 lb/hr	No
1,4-dioxane	152.30	12 lb/day	0.42 lb/day	No
Formaldehyde	39.88	0.04 lb/hr	0.0046 lb/hr	No
n-hexane	957.08	23 lb/day	2.6 lb/day	No
Toluene	1.81	98 lb/day 14.4 lb/hr	0.0050 lb/day 2.1×10^{-4} lb/hr	No

contributing to objectionable odors beyond the facility's boundary. This regulation applies to the StarPet facility and will be included in the Title V Permit.

VI. Regulatory Review - Federal Rules (NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM)

A. New Source Performance Standards

As discussed in Section V.E, above, StarPet is subject to two NSPS under 40 CFR Part 60. The following provides a summary of each of these regulations.

Small Industrial-Commercial-Institutional Steam Generating Units NSPS, Subpart Dc

Subpart Dc applies to small industrial, commercial, and institutional steam generating units constructed, modified or reconstructed after June 9, 1989, and regulates SO₂ and PM (including opacity) emissions from steam generating units with maximum design capacity of 100 million Btu/hr or less, but greater than 10 million Btu/hr. StarPet has three natural gas-fired process heaters that are considered steam generating units with maximum design capacities of 32 million Btu/hr (HTM Heaters Nos. 1 and 2, each) and 53 million Btu/hr (HTM Heater No. 3).

NSPS-affected steam generating units are subject to sulfur dioxide and visible emission (particulate matter) standards, as follows:

Sulfur Dioxide. The NSPS provides SO₂ standards for affected units firing coal and/or oil. Because the NSPS-affected HTM Heaters are only permitted to fire natural gas, the NSPS SO₂ standard is not applicable to these units.

Visible Emissions. The NSPS provides visible emissions standards for affected units with a heat input capacity of greater than or equal to 30 million Btu/hr firing coal, wood, or oil. Because the NSPS-affected HTM Heaters are only permitted to fire natural gas, the VE standard does NOT apply.

StarPet is required under 40 CFR 60.48c(g)(2) to record and maintain records of the amount of natural gas fired in each HTM Heater during each calendar month. Continued compliance is expected.

Volatile Organic Compound Emissions from the Polymer Manufacturing Industry, Subpart DDD

Subpart DDD limits VOC emissions from certain process sources in new, modified, and reconstructed affected facilities within polymer manufacturing plants that produce the following basic polymers: polypropylene, polyethylene, polystyrene, and poly(ethylene terephthalate) (PET). A PET affected facility is considered new/modified/reconstructed after September 30, 1987. The standards also cover VOC emissions from equipment leaks in all of these plants except those producing PET or PET copolymers. The affected facilities are each polymerization and esterification process and, if terephthalic acid is used, the raw materials preparation section is also an affected facility. These processes are affected facilities for only those process emissions that are emitted continuously.

The StarPet PET manufacturing process was constructed after the September 1987 applicability date and is a continuous process that uses terephthalic acid as a raw material.

Process Emission Standards: For a PET process line using the terephthalic acid process, the following apply:

- Total organic compound (TOC) emissions from the esterification reactors in the raw materials preparation section¹⁰ are limited to 0.08 lb TOC/ton product [40 CFR 60.652-1(c)(2)(i)]. At StarPet, the following emissions units are subject to this limit:

¹⁰ Subpart DDD defines the raw materials preparation section as "...the equipment located at a polymer manufacturing plant designed to prepare raw materials, such as monomers and solvents, for polymerization."

- *CP1 Esterification Process:* Esterification Reactors Nos. 1 and 2 (ID Nos. ES-1427-R01 and ES-1423-R02) and Process Column (ID No. ES-1427-C01)– emissions are routed through the Stripper Column (ID No. ES-1427-C02); Reflux Vessel (ID No. ES-1427-V01); and Vapor Condenser (ID No. ES-1427-E02); and
- *CP2 Esterification Process:* Esterification Reactor Nos. 1 and 2 (ID Nos. AB40-B-13R01 and AB40-B-21R01), Process Column (ID No. AB40-B-41C01), Condenser (ID No. AB40-B-63E01), and Reflux Vessel (ID No. AB40-B-63V01) - routed through the CP2 Stripper Column (ID No. AH20-B-10C01)
- TOC Emissions from the polymerization reaction section (including emissions from any equipment used to further recover the ethylene glycol (EG), but excluding those emissions from the cooling tower) are limited to 0.04 lb TOC/ton product [40 CFR 60.562-1(c)(2)(ii)(A)]. StarPet does not use steam-jet ejectors as vacuum producers and is not subject to the limits associated with steam-jet ejectors [40 CFR 60.562-1(c)(2)(ii)(A)]. At StarPet, the following emission units are subject to this limit:
 - *CP1 Polymerization Process:* Disc Ring Reactor (ID No. ES-1463-R01), Scraper Condensers (ID Nos. ES-1463-E01 and ES-1433-E01), Ethylene Glycol Vapor Jet Condenser (ID No. ES-1473-J01), Prepolymerization Reactor (ID No. ES-1433-R01), and Glycol Evaporator (ID No. ES-1473-E03) – routed through the CP1 Vacuum Pump System (ID Nos. ES-1473-K01 and ES-1473-K02);
 - *CP2 Polymerization Process:* Primary Vacuum Pump (ID No. AB60-B-63K02), Backup Vacuum Pump (ID No. AB60-B-63K03), Stripper Still (ID No. AH20-B-10V01), Ethylene Glycol Vapor Jet Ejector (ID No. AB60-B-63K01), Polymerization Reactor Nos. 1 and 2 (ID Nos. AB50-B-30R01 and AB60-B-15R01), Scraper Condensers (ID Nos. AB50-B-30E01 and AB60-B-50E01), Spent Ethylene Glycol Collection Vessels (ID No. AB40-B-41V01 and AB60-B-63V02), Glycol Immersion Vessels (ID Nos. AB50-B-60V01, AB60-B-50V01, and AB60-B-63V01), and Glycol Evaporator (ID No. AB60-B-63E03) - routed through the Stripper Column (ID No. AH20-B-10C01).

On November 14, 1996, EPA responded to an applicability determination request¹¹ for how to apply the applicable standards if emissions from the polymerization and esterification sections of a polymer production plant are routed to a common seal pot before they are released to the atmosphere. EPA responded that because the two facilities in question are part of the same production line and because their emission limits are expressed as mass of emissions per mass of product, the applicable standard would be the sum of the limits for the individual facilities if emissions from the two sections are ducted to a common control device. Therefore, the applicable limit for each continuous polycondensation process (CP1 and CP2) is 0.12 lb TOC/ton product.

Equipment Leak Standards: Subpart DDD does not apply to VOC emissions from equipment leaks from the PET manufacturing process [40 CFR 60.560(a)(4)]. Therefore, the standard for equipment leaks does not apply to CP1 and CP2 at the StarPet plant.

Compliance Demonstration: Compliance with Subpart DDD is demonstrated with performance testing and monitoring, recordkeeping, and reporting. StarPet complies with Subpart DDD by controlling emissions from CP1 and CP2 by routing the emissions to one of two the thermal oxidizers onsite. Subpart DDD requires that a temperature monitoring device be installed in the firebox of a noncatalytic incinerator to ensure the control devices are operated and maintained to ensure compliance [40 CFR 60.563(b)(1)(i) and (c)]. If a vent system has a bypass line that could divert the vent stream away from the

¹¹ U.S. Environmental Protection Agency Applicability Determination Index. Control Number 9700093. "Adding Emission Limits – Subpart DDD." November 14, 1996.

control device, Subpart DDD also has monitoring provisions for these bypass lines. Monitoring provisions for the incinerators and bypass lines will be incorporated into the Title V permit (T12).

Sources subject to Subpart DDD are required to conduct an initial performance test. This was completed on August 8, 2007. Subsequent performance tests are required whenever changes are made in production capacity, feedstock type, or whenever there is a replacement, removal or addition of a control device. Following the modification to the thermal oxidizer (ID No. CD-3420-U01), StarPet conducted a performance test on November 17 and 18, 2016.¹² The permit includes a requirement to conduct additional stack tests once every permit term (i.e., once every five years) to ensure continued compliance.

Subpart DDD also requires StarPet to retain readily-accessible continuous records of the periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. For thermal oxidizers, the parameter boundary is all 3-hour periods of operation during which the average combustion temperature was more than 50°F below the average combustion temperature measured during the most recent performance test at which compliance was demonstrated [40 CFR 60.565(c)].

StarPet is required to submit a semiannual report, including the identification of all periods during which monitoring parameters exceed operating parameter and emission limits established pursuant to Subpart DDD [40 CFR 60.565(k)]. StarPet has consistently followed NSPS Subpart DDD requirements and continued compliance is expected.

B. National Emission Standards for Hazardous Air Pollutants

StarPet is subject to the NESHAP for Chemical Manufacturing Area Sources (CMAS) under 40 CFR Part 63, Subpart VVVVVV (6V). The NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources under 40 CFR Part 63, Subpart JJJJJJ (6J) does not apply to gas-fired boilers [40 CFR 63.11195(e)] and as such, StarPet does not have any boilers or process heaters subject to 6J.

The CMAS standards were finalized in December 2012 and apply to chemical manufacturing process units (CMPUs) that contain specific HAPs listed in Table 1 to Subpart 6V (i.e., Table 1 HAP) in any liquid stream (process or waste) at individual concentrations greater than 0.1 percent by weight [40 CFR 63.11494(a)(2)(iii)]. Therefore, CMAS applies to StarPet due to the generation of acetaldehyde (a Table 1 HAP) above the specified concentration of 0.1 percent by weight. The initial compliance date for StarPet was March 21, 2013.

As noted above, StarPet operates a continuous PET manufacturing process and a continuous SSP unit for recrystallizing the product and controls emissions in accordance with NSPS Subpart DDD and their Major Source HAP avoidance condition. All process vents have total resource effectiveness values (TREs) much greater than 1.0 and thus have no additional control requirements under the CMAS.

Table 4 contains a detailed summary of Subpart 6V requirements and the regulatory applicability analysis for the StarPet facility. The Permit will contain a permit condition related to CMAS and compliance is expected. Subpart 6V incorporates the requirements of 40 CFR Part 63, Subpart SS. Table 5 presents a regulatory applicability analysis to Subpart SS as well.

¹² On January 4, 2017, DAQ issued a letter indicating that, based on a preliminary review of the test report, the test conducted in November 2016 demonstrated compliance with the applicable regulations. However, the final approval has not been issued.

Table 4. Summary of Requirements for 40 CFR Part 63, Subpart VVVVVV: NESHAP for Chemical Manufacturing Area Sources

Citation in Part 63	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
Section 63.11494: What are the applicability requirements and compliance dates?			
63.11494(a)	Applicability	Applies to chemical manufacturing process units (CMPU) that: (1) are located at an area source of HAP; and (2) regulated HAP (i.e., Table 1 HAP) ¹³ are present in the CMPU as feedstock above specified concentrations or as byproducts at above specified concentrations.	<ul style="list-style-type: none"> StarPet operates two CMPUs: CP1 and CP2 StarPet is an area source CP1 and CP2 generate acetaldehyde (at Table 1 HAP) as a byproduct above the specified concentration of 0.1 percent by weight. There are no metal HAP onsite.
63.11494(b)	CMPU	Includes process vessels, equipment, and activities necessary to operate a chemical manufacturing process that produces a material or family of materials in NAICS code 325. A CMPU includes unit operations and associated recovery devices: storage tanks, transfer operations, surge control vessels, and bottoms receivers.	<ul style="list-style-type: none"> StarPet manufactures polyethyl terephthalate (PET) and is under NAICS 325211.
63.11494(c)	Exemptions	This section contains a list of operations that are exempt from Subpart VVVVVV.	<ul style="list-style-type: none"> None of these operations are present at StarPet.
63.11494(d), (f), (g), and (h)	New and Existing Sources	Applies to new and existing sources: (1) an existing source commenced construction or reconstruction before October 6, 2008 and must comply no later than March 21, 2013; and (2) a new source commenced construction on or after October 6, 2008. If construction on the new source commenced on or before October 29, 2009, compliance must be achieved no later than October 29, 2009. If construction commenced on the new source, compliance must be achieved upon startup.	<ul style="list-style-type: none"> Construction commenced on CP1 in 1995 and construction commenced on CP2 in 2007. Therefore, these sources are existing sources with a March 21, 2013 compliance date.
63.11494(e)	Title V Permit	A Title V permit is required if the area source installed a federally-enforceable control device on an affected CMPU and if the control device is necessary to maintain the source's emissions at area source levels. A complete Title V permit application must be submitted no later than December 21, 2013.	<ul style="list-style-type: none"> StarPet operates a thermal oxidizer installed on CP1 and CP2. The thermal oxidizer is necessary to keep HAP emissions below major source thresholds. The Title V Permit Application was submitted on December 6, 2013.
Section 63.11495: What are the management practices and other requirements?			
63.11495(a)	Management practices for process vessels	Process vessels in CMPU must be equipped with cover or lid that must be closed at all times when in organic HAP service except for manual operations that require access. This section has requirements for transfer of liquids containing Table 1 HAP. This section also contains requirements for process vessels and equipment within each CMPU to be inspected for leaks and repair requirements.	<ul style="list-style-type: none"> StarPet is subject to the management requirements for process vessels and the permit will include requirements covers and lids on process vessels as well as inspection and repair requirements. The transfer operations at StarPet do not handle liquids containing organic HAP. Therefore, transfer operations requirements do not apply.

¹³ Table 1 HAP are defined in Subpart VVVVVV as follows:

1. Organic Compounds: 1,3-butadiene, 1,3-dichloropropene, Acetaldehyde, Chloroform, Ethylene dichloride, Hexachlorobenzene, Methylene chloride, and Quinoline;
2. Metal Compounds: Arsenic compounds, Cadmium compounds, Chromium compounds, Lead compounds, Manganese compounds, and Nickel compounds; and
3. Others: Hydrazine.

Table 4 (continued)

Citation in Part 63	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
63.11495(b)	Management practices for small heat exchange systems.	Small heat exchange systems are defined as having a cooling water flow rate less than 8,000 gallons per minute. If the heat exchangers do not meet conditions specified in 40 CFR 63.104(a), a heat exchange system inspection plan is required, and leaks must be repaired within 45 days. Records of inspections and leak repairs are required.	<ul style="list-style-type: none"> StarPet has seven heat exchange systems onsite (ID Nos. I-3851-E01 through E03 and I-3852-E01 through E04). According to their permit application all seven have flow rates less than 8,000 gallons per minute. StarPet provided additional information addressing whether the heat exchangers meet the 63.104(a) conditions. According to the information provided in an email dated 11/29/2016, the heat exchangers do not meet 63.104(a) and this section applies. The heat exchangers are on the insignificant activities list and do not have permit conditions. However, StarPet will still be required to comply with the requirements of 63.11495(b).
63.11495(c)	Startup, shutdown and malfunction	Startup, shutdown and malfunction provisions in subparts cross-referenced in this section do not apply.	<ul style="list-style-type: none"> Any time a cross-referenced subpart has SSM provisions, the permit will be written such that these are not included.
63.11495(d)	General Duty	Requires affected CMPUs and associated control devices to be operated in a manner consistent with safety and good air pollution control practices for minimizing emissions.	<ul style="list-style-type: none"> The permit will include this requirement.
Section 63.11496: What are the standards and compliance requirements for process vents?			
63.11496(a)	Organic HAP emissions from batch process vents	This section contains the requirements for batch process vents.	<ul style="list-style-type: none"> This section does not apply. StarPet does not have batch process vents.
63.11496(b)	Organic HAP emissions from continuous process vents.	This section requires continuous process vents to reduce HAP emissions. Sources can determine the total resource effectiveness (TRE) for a continuous process vent. Sources with TRE less than or equal to 1.0 must comply with this section and Table 3 requirements. Sources do not have to calculate TRE if emissions are controlled with the Table 3 requirements. Table 3 requires organic HAP emissions to be reduced by 95 percent or greater. Compliance is demonstrated by complying with 40 CFR Subpart SS.	<ul style="list-style-type: none"> For the CMPUs subject to this subpart (CP1 and CP2) StarPet reduces emissions from several process vents (see above for the list of controlled process units in CP1 and CP2) by ducting them to one of two thermal oxidizers. Table 3 refers to the Subpart SS requirements for and the requirements referenced therein. See Table 5 below for the Subpart SS requirements.
		If the emissions in the vent stream are less than 0.1 lb/hr, the TRE is assumed to be greater than 1.0 and there are no requirements.	<ul style="list-style-type: none"> StarPet has several uncontrolled process vents in CP1 and CP2. The reported emissions from each of these vents is less than 0.1 lb/hr (See Table 1, above) and StarPet assumes that the TRE for all of these vents is greater than 1.0. Therefore, there are no requirements under Subpart 6V.
63.11496(c)	Combined streams	This section contains requirements for processes where batch and continuous process vents are combined.	<ul style="list-style-type: none"> This section does not apply. StarPet does not have batch process vents.
63.11496(d)	Halogenated streams	This section contains requirements for emission streams that are halogenated.	<ul style="list-style-type: none"> This section does not apply. StarPet does not have halogenated streams.
63.11496(e)	Alternative standard for organic HAP	This section contains exceptions to the requirements for the alternative compliance requirements.	<ul style="list-style-type: none"> This section does not apply. StarPet does not intend to comply with the alternative standards.

Table 4 (continued)

Citation in Part 63	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
63.11496(f)	Emissions from metal HAP process vents	This section contains requirements for metal HAP emissions from CMPUs.	<ul style="list-style-type: none"> • This section does not apply. StarPet does not have CPU processes in metal HAP service.
63.11496(g)	Exceptions and alternatives to 40 CFR Part 63, Subpart SS	<p>Sources that are complying with the emission limits and other requirements from Table 3 of Subpart VVVVVV have to comply with this section in addition to the provisions in Subpart SS. The additional requirements for continuous process vents are:</p> <ol style="list-style-type: none"> 1. Performance tests; 2. Design evaluation; 3. Outlet concentration for combustion devices; 4. Continuous parameter monitoring; 5. Startup, shutdown, and malfunction; 6. Excused excursions; 7. Energetics and organic peroxides; and 8. Parameter monitoring averaging periods. 	<ul style="list-style-type: none"> • StarPet is complying with the emission limits in Table 3 for each CPU (CP1 and CP2) and therefore is complying with Subpart SS. These requirements will be included in the permit in addition to those from Subpart SS, except for the design evaluation, and energetics and organic peroxides, which do not apply.
63.11496(h)	Surge control vessels and bottoms receivers	This section contains standards for surge control vessels and bottoms receivers.	<ul style="list-style-type: none"> • This section does not apply. StarPet does not have surge control vessels and bottoms receivers that are in organic HAP service and have TRE greater than 1.0.
Section 63.11497: What are the standards and compliance requirements for storage tanks?			
63.11497	Standard for storage tanks	The storage tank standards apply to storage tanks that have a design capacity $\geq 20,000$ gallons, store liquid that contains Table 1 organic HAP, and has a max true vapor pressure at the storage temperature ≥ 5.2 kPa	<ul style="list-style-type: none"> • This section does not apply. StarPet does not own or operate any storage tanks that store Table 1 organic HAP.
Section 63.11498: What are the standards and compliance requirements for wastewater systems?			
63.11498	Standards for wastewater systems	The wastewater system standards apply to all wastewater streams from a CMPUS subject to Subpart 6V. Wastewater streams are required to discharge the wastewater to onsite or offsite wastewater treatment or hazardous waste treatment and to maintain records identifying each wastewater stream and document the type of treatment it receives. If the partially soluble HAP concentration in the wastewater stream $\geq 10,000$ ppmw and the wastewater stream contains a separate organic phase, additional requirements apply.	<ul style="list-style-type: none"> • StarPet submitted, in their NOCS, that the partially soluble HAP concentration is $< 10,000$ ppmw and does not contain a separated organic phase. StarPet also discharges their wastewater streams to a local publically owned treatment works (POTW) where it undergoes secondary and tertiary treatment. • The Permit will contain conditions requiring that the partially soluble HAP concentrations must be reevaluated if any process or operational changes are made that would affect the concentration in a wastewater stream. • The Permit will also contain conditions requiring the continued treatment of the wastewater streams in the POTW and the required recordkeeping.
Section 63.11499: What are the standards and compliance requirements for heat exchange systems?			
63.11499(a)	Standard for heat exchange systems	This section requires that any heat exchange system with a cooling water flow rate $\geq 8,000$ gallons/minute and not meeting the requirements in 40 CFR 63.104(a) must comply with requirements in Table 8 of Subpart 6V.	<ul style="list-style-type: none"> • This section does not apply. As discussed above, the seven heat exchange systems, all with cooling water flow rates less than 8,000 gallons/minute.

Table 4 (continued)

Citation in Part 63	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
Section 63.11500: What compliance options do I have if part of my plant is subject to both this subpart and another Federal standard?			
63.11500	Compliance with multiple federal standards.	This section handles the overlap for facilities that are subject to other Part 63 subparts; Part 60 subparts, or part 61 subparts. Generally, compliance with the other subparts that are at least as stringent as the corresponding requirements in Subpart 6V, will constitute compliance with Subpart 6V.	<ul style="list-style-type: none"> StarPet is subject to the NSPS for polymers and resins under 40 CFR Part 60, Subpart DDD. However, StarPet did not provide a comparison between Subpart DDD and Subpart 6V in their permit application.
Section 63.11501: What are the notification, recordkeeping, and reporting requirements, and how may I assert an affirmative defense for violation of emission standards during malfunction?			
63.11501(a)	General Provisions	This refers to the sections of the General Provisions in 40 CFR Part 63, Subpart A that apply to sources subject to Subpart 6V.	<ul style="list-style-type: none"> Where applicable, the Permit will incorporate those sections of the General Provisions that apply.
63.11501(b)	Notification of Compliance Status	This section contains the requirements for the Notification of Compliance Status (NOCS) that are required in addition to the NOCS requirements in the General Provisions. The NOCS is required 60 calendar days following the completion of the compliance demonstration activities specified in Subpart 6V.	<ul style="list-style-type: none"> For StarPet, the NOCS was due 60 days following the compliance date of March 21, 2013. Therefore, the NOCS was due on May 20, 2013. StarPet submitted their NOCS on May 15, 2013. Because the due date for this requirement has passed, the permit will not include a requirement to submit an NOCS.
63.11501(c)	Recordkeeping	This section contains the recordkeeping requirements that apply in addition to any recordkeeping that is required under Subpart SS (see Table 5).	<ul style="list-style-type: none"> The recordkeeping requirements that apply to StarPet for CMPUs and wastewater streams will be included in the permit.
63.11501(d)	Semiannual Compliance Reports	This section contains the requirements for semiannual compliance reports in addition to the applicable reports required under Subpart SS.	<ul style="list-style-type: none"> The reporting requirements that apply to StarPet for CMPUs and wastewater streams will be included in the permit.
63.11501(e)	Affirmative Defense for Violation of Emission Standards during Malfunction	This section contains the requirements for establishing an affirmative defense to a claim for civil penalties for violation of standards that are caused by malfunction. Notifications and reports are required.	<ul style="list-style-type: none"> This section applies and is addressed in General Condition J of the permit.

**Table 5. Summary of Requirements for 40 CFR Part 63, Subpart SS, NESHAP for
Closed Vent Systems, Control Devices, Recovery Devices
and Routing to a fuel Gas System or a Process**

Citation in Part 63 ¹⁴	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
63.982(c)	Closed Vent System and Nonflare Control Device	This section applies to owners and operators that control emissions through a closed vent system to a nonflare control device. This section identifies the sections in Subpart SS that apply to process vents, including: (1) §63.983 for closed vent systems and the applicable recordkeeping and reporting requirements in §§63.998 and 63.999; (2) §§63.988 (incinerators, boilers and process heaters), 63.990 (absorbers, condensers, and carbon adsorbers used as control devices), or 63.995 (other control devices); (3) general monitoring requirements in §63.996; and (4) the performance test requirements and procedures in §63.997.	<ul style="list-style-type: none"> StarPet controls emissions from CP1 and CP2 by venting the emissions through a closed vent system to a thermal oxidizer. The sections that apply are §§63.983, 63.988, 63.966, 63.997, 63.998 and 63.999.
Section 63.983: Closed vent system			
63.983(a)	Closed vent system equipment and operating requirements.	This section contains the requirements for closed vent systems (CVS) venting regulated materials from a regulated source. Specifically, there are requirements for (1) the collection of emissions, (2) the period of operation, (3) bypass monitoring, (4) loading arms at transfer racks, and (5) pressure relief devices in a transfer rack's CVS.	<ul style="list-style-type: none"> StarPet vents emissions of organic HAP from CP1 and CP2 to thermal oxidizers and is subject to these CVS requirements. The permit will contain conditions with the requirements from this section. StarPet does not have transfer racks that operate in organic HAP service and these requirements do not apply.
63.983(b)	Closed vent system inspection and monitoring requirements.	This section specifies the inspection requirements for CVS collecting regulated materials from a regulated source. For CVS constructed of hard-piping, an initial full inspection [see 63.983(c)] is required and annual inspections are required for visible, audible, or olfactory indications of leaks. For CVS constructed of ductwork, initial and annual full inspections are required. This section also has provisions for inspection of unsafe-to-inspect and difficult-to-inspect CVS, as well as inspections for bypass lines.	<ul style="list-style-type: none"> StarPet will be subject to the CVS requirements for collecting HAP emissions from CP1 and CP2. The Permit will contain conditions for CVS inspections with exceptions for inspection of unsafe-to-inspect and difficult-to-inspect CVS and bypass lines.
63.983(c) and (d)	Closed vent system inspection procedures and closed vent system leak procedures.	These sections specify the inspection and leak repair procedures for CVS collecting regulated materials from a regulated source.	<ul style="list-style-type: none"> The requirements in these sections will be incorporated into the permit.
Section 63.988: Incinerators, boilers and process heaters			
63.988(a)	Equipment and operating requirements	This section applies to owners and operators that use an incinerator, boiler or process heater to meet a weight-percent emission reduction or parts per million by volume outlet concentration requirement. Incinerators, boilers and process heaters are required to be operated at all times when emissions are vented to them and the vent stream is required to be introduced into the flame zone.	<ul style="list-style-type: none"> StarPet uses thermal oxidizers (i.e., incinerators) to reduce HAP emissions from CP1 and CP2 to comply with the weight-percent emission reduction requirement of Subpart 6V. The requirements of this section will be incorporated into the permit.

¹⁴ As discussed in Table 4, above, continuous process vents in CP1 and CP2 are required by Table 3 of Subpart 6V to comply with the Subpart SS, specifically "...the requirements of §63.982(c) and the requirements referenced therein." Therefore, this table will not address all sections of Subpart SS, but only those that are applicable to CP1 and CP2.

Table 5 (continued)

Citation in Part 63 ¹⁴	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
63.988(b)	Performance test requirements	Under this section, owners and operators are required to conduct an initial performance test according to 63.997 (see below). Performance tests are not required when one of control devices specified in the section are being used (e.g., boiler or process heater with a design capacity of 150 MMBtu/hr or larger). Design evaluations are allowed as an alternative to the performance test for storage vessels and low throughput transfer rack controls. No performance test is required for equipment leaks.	<ul style="list-style-type: none"> StarPet is required to conduct the initial performance testing as specified in this section. They are not using any of the specified control devices and they are not using the oxidizers to control equipment leak emissions. The thermal oxidizers are not being used to control storage vessels and low throughput transfer racks so design evaluations are not an alternative. The Permit will contain conditions referring to these performance testing requirements.
63.988(c)	Incinerator, boiler, and process heater monitoring requirements.	This section specifies that any incinerator, boiler, or process heater that is used as a control device must be equipped with temperature monitoring devices capable of providing continuous records. This section provides exemptions from monitoring for boilers and process heaters. The location of the temperature monitoring device is also specified for types of incinerators, boilers, or process heaters.	<ul style="list-style-type: none"> StarPet is using thermal oxidizers and is required to install a continuous temperature monitoring device in the ductwork immediately downstream of the fire box in a position before any substantial heat exchange occurs. The Permit will contain conditions requiring monitoring of the thermal oxidizers as required in this section.
Section 63.996: General Monitoring requirements for control and recovery devices			
63.996(a)	General monitoring requirements applicability	This section applies to owners and operators of regulated sources required to monitor, except flares and flow indicators are not subject to this section.	<ul style="list-style-type: none"> This section applies to the continuous temperature monitoring devices installed on the thermal oxidizers to control CP1 and CP2.
63.996(b)	Conduct of monitoring	<p>This section provides for instances when monitoring might not apply as required elsewhere in Subpart SS or the referencing subpart:</p> <ul style="list-style-type: none"> If the Administrator approves or specifies minor changes in methodologies or alternatives to monitoring requirements When one CPMS is used as a backup to another CPMS, the owner or operator is required to report results from the CPMS being used and specify which CPMS is being used. 	<ul style="list-style-type: none"> StarPet has not sought out modifications or alternatives to the specified monitoring. The permit will contain a condition related to the use of backup CPMS.
63.996(c)	Operation and maintenance of continuous parameter systems.	<p>This section specifies the proper operation of continuous monitoring system equipment:</p> <ul style="list-style-type: none"> Use manufacturer's or other written (and appropriate) specifications, Operate with good air pollution control practices Verify CPMS data in conjunction with conducting performance tests Install CPMS such that representative measurements of parameters from the regulated source are obtained. Operate CPMS at all times emissions are being routed to the control device except as specified. Establish a range for the monitored parameters that indicates proper control device operation. 	<ul style="list-style-type: none"> StarPet is required to install a continuous temperature monitoring system. The permit will include these operation and maintenance requirements for CPMS. Subpart 6V specifies that references to an SSM plan [63.996(c)(2)(ii)] are not applicable.

Table 5 (continued)

Citation in Part 63 ¹⁴	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
63.996(d)	Alternatives to monitoring requirements	This section allows for alternatives to CPMS monitoring and recordkeeping provisions as well as monitoring different parameters other than those listed.	<ul style="list-style-type: none"> • This section does not apply. StarPet has not requested alternatives to monitoring.
Section 63.997: Performance test and compliance assessment requirements for control devices			
63.997(a)	Performance tests and flare compliance assessments	This section applies when required under 63.985 through 63.995 to conduct performance testing of control devices.	<ul style="list-style-type: none"> • Under 63.988, StarPet is required to conduct performance testing of the thermal oxidizers.
63.997(b)	Prior test results and waivers.	<p>This section provides specifications for obtaining waivers from conducting performance tests to comply with Subparts SS and 6V:</p> <ul style="list-style-type: none"> • A prior performance test conducted using the same required methods and either no process changes have been made since the test or it can be demonstrated that the results of the test reliably demonstrate compliance despite process changes. • Individual performance tests may be waived if specified requirements are met. • The Administrator can cancel the testing waiver if warranted. 	<ul style="list-style-type: none"> • StarPet has not submitted a request for a waiver from the performance test requirements for the thermal oxidizers. One thermal oxidizer (ID No. CD-3420-U01) was modified with Permit No. R11 and is required to conduct a new performance test. • The permit will require that both oxidizers be tested to establish the temperature monitoring ranges.
63.997(c)	Performance tests and flare compliance assessments schedule	<p>This section specifies the schedule for initial performance testing.</p> <ul style="list-style-type: none"> • Generally, sources are required to conduct performance tests within 180 days after becoming subject to a rule. • If an existing control device is replaced by either a recovery device or another control device, this section requires the regulated source to amend its Title V permit (if applicable) and a compliance demonstration or performance test is required within 180 days. 	<ul style="list-style-type: none"> • The permit will specify when the initial performance tests are required.
63.997(d)	Performance testing facilities	This section specifies what the owner and operator is required to provide for testing, including: sampling ports, safe sampling platforms, safe access to sampling platforms, utilities for sampling and testing equipment and any other testing facilities deemed necessary by the Administrator.	<ul style="list-style-type: none"> • The permit will include a condition for the testing facilities.
63.997(e)	Performance test procedures	<p>This section specifies the procedures for conducting performance testing.</p> <ul style="list-style-type: none"> • General procedures for: <ul style="list-style-type: none"> ○ Continuous unit operations and combinations of both continuous and batch unit operations; ○ Alternatives to performance test requirements; and ○ Performance test runs. • Specific procedures for: <ul style="list-style-type: none"> ○ Selection of sampling sites; ○ Measuring gas volumetric flowrate; ○ Measuring regulated compounds; and ○ Calculating percent reduction. • Specific procedures for halogen control device performance tests. 	<ul style="list-style-type: none"> • The permit will include conditions for the applicable testing procedures, including general procedures applicable to continuous unit operations (StarPet does not have batch unit operations). • StarPet did not request alternatives to performance testing. • The permit will also include the applicable specific procedures, except for halogen emissions control devices, as StarPet does not have halogenated streams.

Table 5 (continued)

Citation in Part 63 ¹⁴	Description of Section	Brief Summary of Rule Requirements	Summary of Applicability to StarPet
Section 63.998: Recordkeeping Requirements			
63.998	Recordkeeping requirements	<p>This section requires owners and operators to maintain records:</p> <ul style="list-style-type: none"> • Compliance assessment, monitoring, and compliance records • Continuous records and monitoring system data handling • Nonflare control and recovery device regulated source monitoring records • Other Records: <ul style="list-style-type: none"> ○ Closed vent systems, ○ Storage vessel/transfer racks, ○ Regulated source and control equipment startup, shutdown, and malfunctions, ○ Equipment leaks, and ○ Monitored parameters out of range. 	<ul style="list-style-type: none"> • The permit will include all applicable recordkeeping requirements for compliance assessments, temperature monitoring, thermal oxidizer operation, closed vent systems, and monitored parameters out of range. • Subpart 6V specifically exempts subject facilities from the startup, shutdown and malfunction-related recordkeeping activities.
Section 63.999: Notifications and Other Reports			
63.999	Notifications and other reports	<p>This section requires owners and operators to submit notifications and reports:</p> <ul style="list-style-type: none"> • Performance test and flare compliance assessment notifications and reports; • Notification of compliance status; • Periodic reports; and • Requests for approval of monitoring alternatives. 	<ul style="list-style-type: none"> • The Permit will include all applicable reporting and notification requirements.

C. New Source Review/Prevention of Significant Deterioration

StarPet is located in Randolph County which is currently in attainment for all pollutants. Further, the StarPet facility does not have the potential to emit any regulated pollutants at a rate of 250 tpy or greater and is therefore currently classified as minor for PSD/NSR purposes. This permit renewal does not affect this status.

D. 112(r)

StarPet is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances.

E. Compliance Assurance Monitoring

The compliance assurance monitoring (CAM) rule requires owners and operators to conduct monitoring to provide a reasonable assurance of compliance with applicable requirements under the act. Monitoring focuses on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. An emission unit is subject to CAM, under 40 CFR Part 64, if all of the following three conditions are met:

- The unit is subject to any (non-exempt, e.g., pre-November 15, 1990, Section 111 or 112 standard) emission limitation or standard for the applicable regulated pollutant.
- The unit uses any control device to achieve compliance with any such emission limitation or standard.
- The unit's pre-control potential emission rate exceeds 100 percent of the amount required for a source to be classified as a major source; i.e., either 100 tpy (for criteria pollutants) or 10 tpy of any individual/25 tpy of any combination of HAP.

In addition, an emissions unit is not subject to CAM if the unit is subject to one of the following emissions limitations or standards:

- Emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act.
- Stratospheric ozone protection requirements under title VI of the Act.
- Acid Rain Program requirements pursuant to sections 404, 405, 406, 407(a), 407(b), or 410 of the Act.
- Emission limitations or standards or other applicable requirements that apply solely under an emissions trading program approved or promulgated by the Administrator under the Act that allows for trading emissions within a source or between sources.
- An emissions cap that meets the requirements specified in §70.4(b)(12) or §71.6(a)(13)(iii) of this chapter.
- Emission limitations or standards for which Title V permit contains a continuous compliance determination method, as defined in 40 CFR 64.1, unless the applicable compliance method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device (e.g., a surface coating line controlled by an incinerator for which continuous compliance is determined by calculating emissions on the basis of coating records and an assumed control device efficiency factor based on an initial performance test; in this example, this part would apply to the control device and capture system, but not to the remaining elements of the coating line, such as raw material usage).

Table 1, above, shows the permitted emissions units from Section 1 of the permit.¹⁵ As shown in Table 1, none of the permitted sources have uncontrolled emissions greater than 100 tpy. Therefore, CAM does not apply to the StarPet facility.

¹⁵ A CAM analysis was not conducted for insignificant activities, which by definition, would be exempt from CAM with uncontrolled emissions less than 5 tpy (or 0.5 tpy for HAP).

VII. Facility Wide Air Toxics

As discussed in Section V.I, above, StarPet does not emit TAP in amounts greater than the TPERs in 02Q .0711. Therefore, Air Toxics regulations do not apply to StarPet.

VIII. Facility Emissions Review

This is a first-time Title V facility. Actual emissions for 2003, 2008, and 2012, as reported in the emission inventories, are presented in the table at the beginning of this permit review.

IX. Facility Compliance Status

DAQ has reviewed the compliance status of this facility. During the most recent inspection, conducted on January 6, 2016, by Mr. Robert Barker, of the WSRO, the facility appeared to be in compliance with all applicable requirements. On April 20, 2016, a notice of violation (NOV) and notice of recommendation for enforcement (NRE) was issued to StarPet for exceeding the VOC and HAP emission standards under 40 CFR Part 60, Subpart DDD and 40 CFR Part 63, Subpart VVVVVV and is currently being processed.

X. Draft Permit Review Summary

A copy of the draft permit was submitted to StarPet and the WSRO on February 7, 2017. StarPet responded on February 21, 2017. In their email StarPet raised the following issues:

- EP31 – Error found in emission source (ID No. I-2901-V22) calculation in form B & C1. Corrected forms attached.
- EP62 –Source ID No. I-2902-S11 used to be controlled through I-CD-2902-S12 cyclone separator. To further improve the control efficiency a fabric filter (ID No. I-CD-2902-S111) was installed.. Corrected forms attached.
- EP63 –Source ID No. 2902-S21 used to be controlled through 2902-S22 cyclone separator. To further improve the control efficiency a fabric filter (ID No. CD-2902-S121) was installed. That changes the control device from CD-2902-S21 to CD-2902-S121. Corrected forms attached.
- EP64 – Bagging Station (ID No. I-2902-S03) has been taken offline and removed. Please remove this system.
- EP35 & EP91 – Error in forms were identified and corrected. No change in total emissions.
- Several forms for installed fabric filters were not updated and still had expected filter sizes. The corrected information for current bag filters was provided. There is no change to final emissions.

Corrections listed above were incorporated into the permit and the questions regarding the performance testing and inspection requirements were addressed.

In addition, StarPet commented that the draft permit had an annual performance testing requirement for the thermal oxidizer (ID No. CD-3420-U01) and Regenerative Thermal Oxidizer (ID No. CD-AH20-B-10U01) associated with the NSPS Subpart DDD. Upon further review, the NSPS does not require annual testing and this requirement was updated accordingly.

StarPet also expressed concern with respect to the condition requiring internal annual inspection of the SSP cyclones (ID No. CD-1610-S04 and CD-1805-S01) to demonstrate compliance with 02D .0515. As discussed above, the margin of compliance with 02D .0515 is very large (actual emissions are less than 1 percent of the allowable rate) and according to StarPet, the source is very hot and insulated with no inspection port. Therefore, the condition was revised to only require an annual inspection of the structural integrity of the source.

Mr. Robert Barker, WSRO, responded on February 24, 2017 via a telephone conversation with Ms. Heather Sands. Mr. Barker asked what the basis was for the condition in Section 2.1 B.1.f.iii. After further review of NSPS Subpart DDD, it was determined that this condition was not necessary as a monitoring requirement (it was related to a recordkeeping requirement) and it was removed from the permit. Mr. Barker also asked whether the MACT avoidance condition in Section 2.2 A.1 was appropriate given the NOV/NRE issued in May 2016. StarPet is currently working with the Stationary Source Compliance Branch on this issue. Once this permit action is completed, the rolling average HAP emissions should be below the 10/25 tpy threshold. Therefore, no changes were made to this condition.

XI. Public Notice/EPA and Affected State(s) Review

Pursuant to 15A NCAC 02Q .0521, a notice of the DRAFT Title V Permit shall be made (via DAQ website). The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 2Q .0521 above.

The State of Virginia is an affected area within approximately 50 miles of the facility.

Notice of the DRAFT Title V Permit to Affected States ran from XXXX YY, 2017, to XXXX YY, 2017. *Insert summary of comments received.*

Public Notice of the DRAFT Title V Permit ran from XXXX YY, 2017, to XXXX YY, 2017. *Insert summary of comments received.*

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXX YY, 2017, to XXXX YY, 2017. *Insert summary of comments received from EPA and U.S. EPA Region 4 regarding the DRAFT Title V Permit.*

XII. Conclusions, Comments and Recommendations

PE Seal

Pursuant to 15A NCAC 02Q .0112 "Application requiring a Professional Engineering Seal," a professional engineer's seal (PE Seal) is required to seal technical portions of air permit applications for new sources and modifications of existing sources as defined in Rule .0103 of this Section that involve:

- (1) design;
- (2) determination of applicability and appropriateness; or
- (3) determination and interpretation of performance; of air pollution capture and control systems.

A professional engineer's seal (PE Seal) was **NOT** required for this first-time Title V permit.

Zoning

A Zoning Consistency Determination per 02Q .0304(b) was **NOT** required for this initial Title V permit application. However, StarPet included a zoning consistency determination signed by the City of Asheboro Zoning Administrator/Planner on December 9, 2013.

Recommendations

This permit modification application has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility appears to be complying with all applicable requirements.

Recommend Issuance of Permit No. 08157T12. WSRO has received a copy of this permit and submitted comments that were incorporated as described in Section X.